National Institute of Environmental Health Sciences

Analysis of the El Nino/La Nina-Southern Oscillation variability and malaria in the Estado Sucre, Venezuela

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Abstract:

The last decade has seen an unprecedented, worldwide acceleration of environmental and climate changes. These processes impact the dynamics of natural systems, which include components associated with human communities such as vector-borne diseases. The dynamics of environmental and climate variables, altered by global change as reported by the Intergovernmental Panel on Climate Change, affect the distribution of many tropical diseases. Complex systems, e.g. the El Nino/La Nina-Southern Oscillation (ENSO), in which environmental variables operate synergistically, can provoke the reemergence and emergence of vector-borne diseases at new sites. This research investigated the influence of ENSO events on malaria incidence by determining the relationship between climate variations, expressed as warm, cold and neutral phases, and their relation to the number of malaria cases in some north-eastern municipalities of Venezuela (Estado Sucre) during the period 1990-2000. Significant differences in malaria incidence were found, particularly in the La Nina ENSO phases (cold) of moderate intensity. These findings should be taken into account for surveillance and control in the future as they shed light on important indicators that can lead to reduced vulnerability to malaria.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, El Nino Southern Oscillation, Extreme Weather Event, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content